

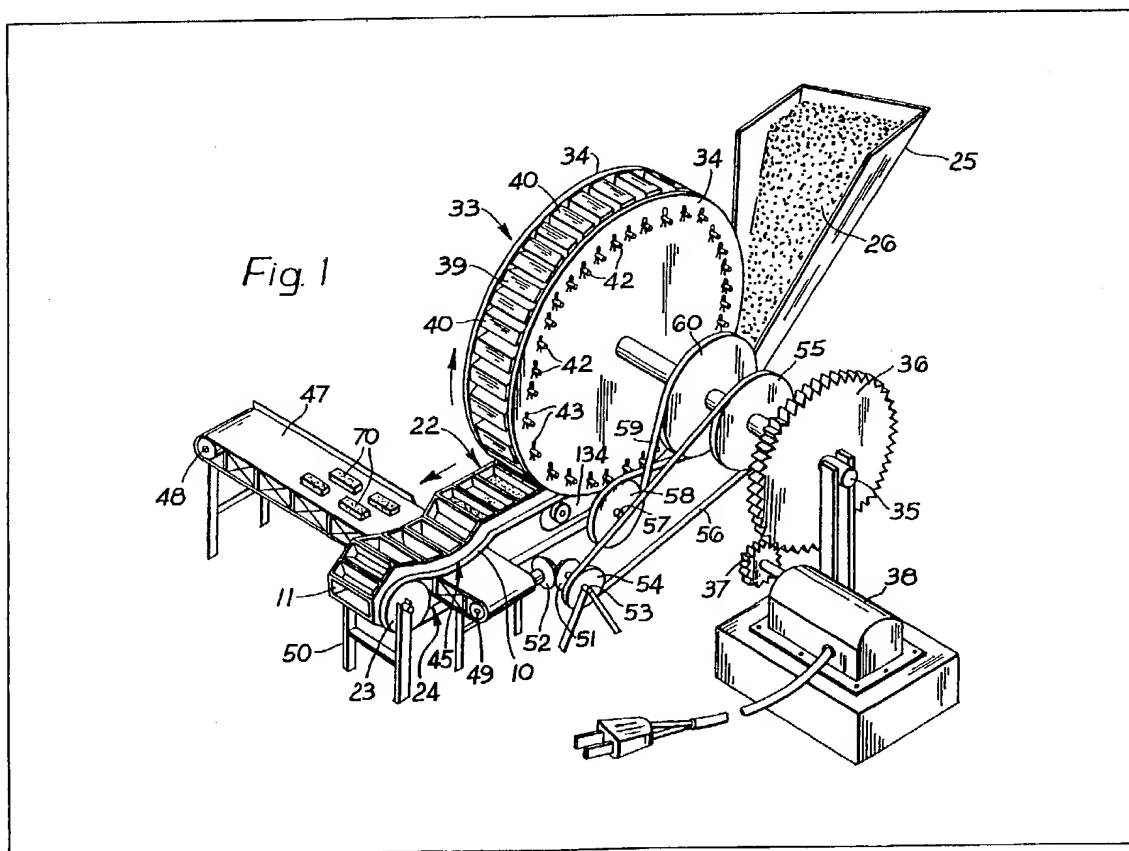
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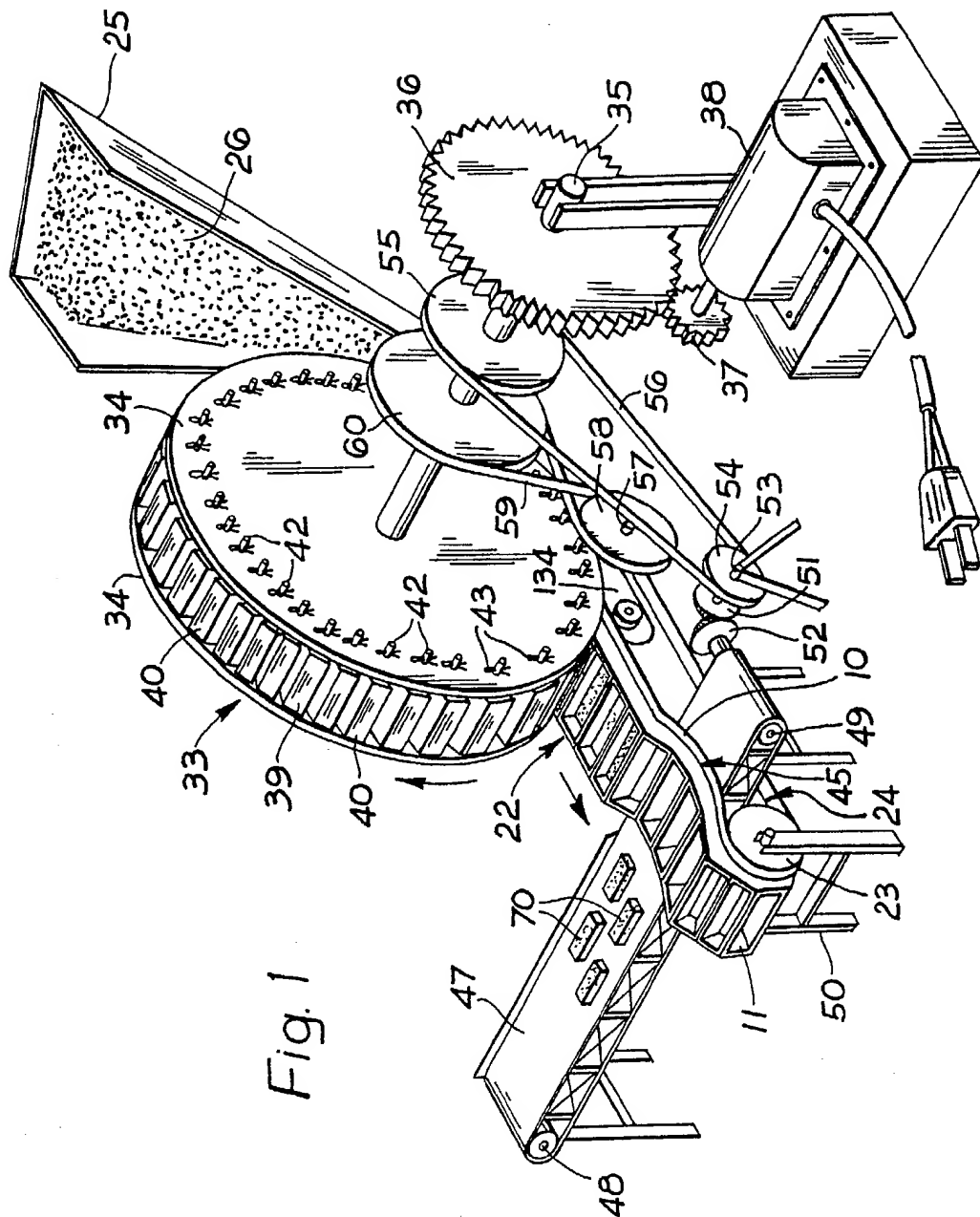
(54) High speed brick-pressing machine

(57) Moulds 31 are connected together to form an endless band of which the upper run passes beneath a hopper 1 from which wet clay fills the moulds 31 which then pass beneath a pressing wheel carrying swingably-mounted pressing shoes 32 which enter the respective moulds 31 to compress the clay and form unburnt bricks. As each mould passes a discharge station defined by curved portions 24 of guide rails 17, separation of its front and rear walls permits the respective unburnt brick to drop out onto conveyor 29.

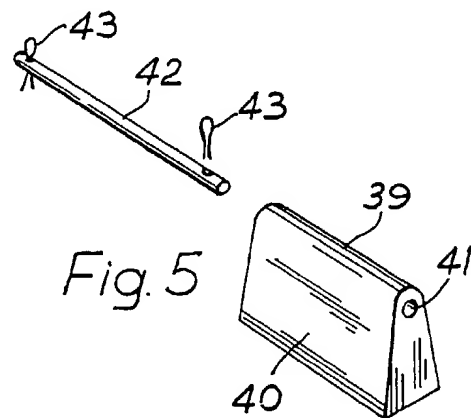
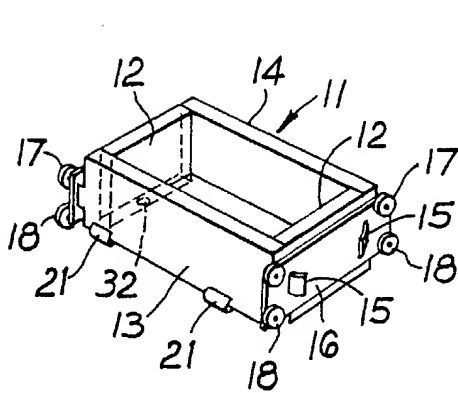
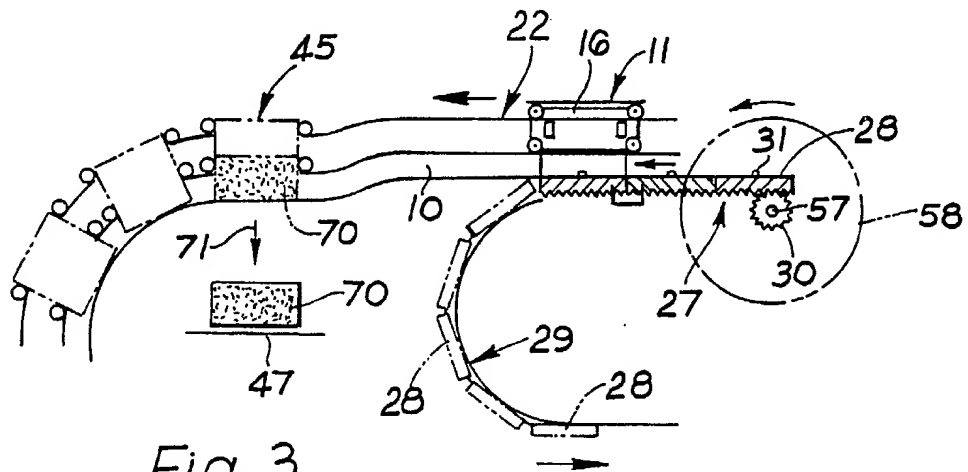
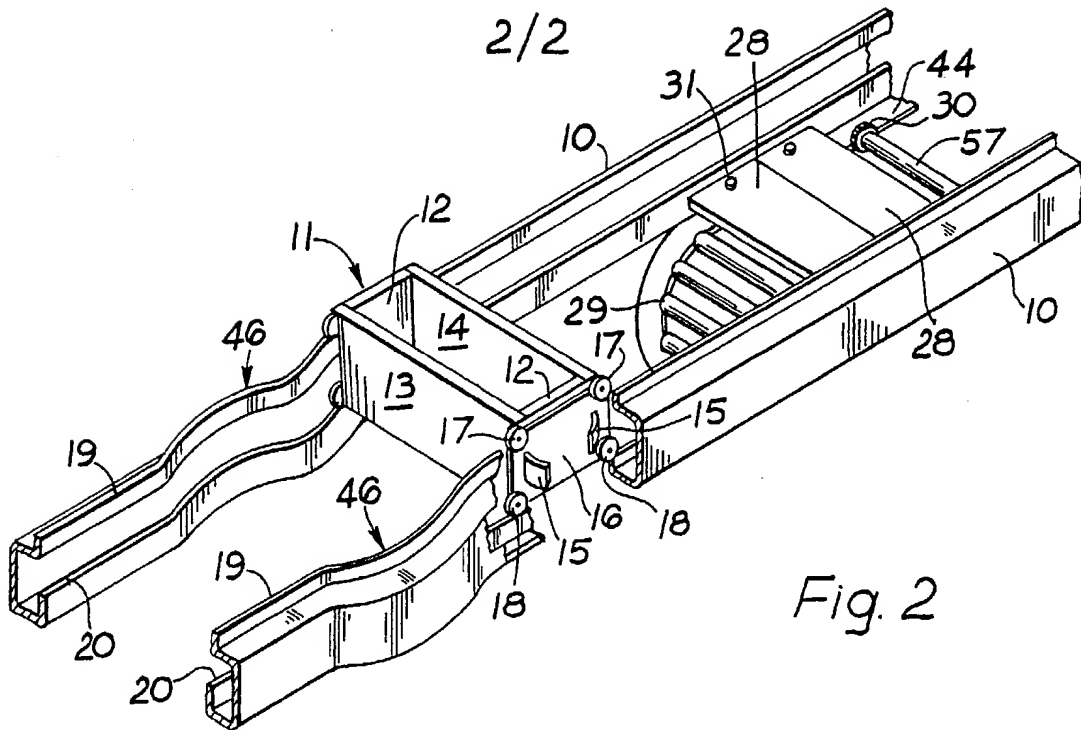


The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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SPECIFICATION

High speed brick-pressing machine

5 This invention relates to a high speed brick-pressing machine and has for its object to provide an improved construction of such a machine which enables unburnt bricks to be prepared from clay at a very high speed, for example in excess of four times
10 the speed of prior known machines.

With this object in view, the present invention provides a high speed brick-pressing machine comprising a plurality of brick moulds arranged as a succession which moves along a path extending (a)
15 beneath a hipper for clay to be filled into the successive moulds, (b) beneath a pressing which having distributed around its periphery a plurality of pressing members which enter the successive mould to compress the clay therein as unburnt
20 bricks, and (c) past a discharge station at which the unburnt bricks are emptied from the moulds.

A particularly convenient construction of the pressing wheel comprises side-by-side cheeks, e.g. in the form of discs mounted on a shaft, having the
25 pressing members accommodated therebetween. These pressing members may, for instance, be in the form of shoes swingably located between the cheeks, for example by respective rods through the shoes and located by their ends in the cheeks.

In a preferred embodiment of the machine, the moulds are connected together as an endless band of which the upper run extends beneath the hopper and the pressing wheel and past the discharge station, and the discharge station comprises a
35 conveyor over which the moulds pass to deposit their unburnt bricks.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:-

40 *Figure 1* is a diagrammatic perspective view illustrating a practical embodiment of the brick-pressing machine of the invention;

Figure 2 is an enlarged fragmentary detail illustrating, in perspective, a section of guide rail for moulds,
45 and moulds support boards of the machine of *Figure 1*;

Figure 3 is a detached diagrammatic side view corresponding approximately to *Figure 2*, and illustrating how the moulds are emptied;

50 *Figure 4* is a perspective view illustrating the construction of one of the moulds of the machine of *Figures 1* to *3*; and

Figure 5 is a detached perspective view illustrating one of the pressing shoes, and its mounting rod, of
55 the machine of *Figures 1* to *4*.

The illustrated preferred embodiment of the high speed brick-pressing machine of the invention comprises a pair of guide rails 10 which are spaced apart and serve to guide a plurality of brick moulds 11,
60 which are open at top and bottom and of which one is shown in detail in *Figure 4*. As can be seen, each brick mould 11 comprises end walls 12 and front and rear walls 13, 14 respectively. These walls are located relative to one another by resilient tongues
65 15 provided on each end of the front and rear walls

13, 14 projecting through respective slots in respective carriage plates 15 provided at each end of the mould 11 and secured to the respective end walls 12.

The tongues 15 at each end of the mould 11 are curved so as to converge towards one another.
70 Accordingly, it will be understood that in the event of the carriage plates 16 being caused to separate from one another reaction thereof with the tongues 15 causes the front and rear walls 13, 14 to separate.
75 Thus, all four walls 12 and 13, 14 separate when the carriage plates 16 separate and return to the illustrated dispositions when the carriage plates 16 move towards one another.

The carriage plates 16 are fitted with respective
80 upper and lower pairs of guide wheels 17 and 18 which are circumferentially grooved to engage with and run along respective ledges 19 and 20 of the guide rails 10 (see particularly *Figure 2*), and these guide rails 10 serve to guide the moulds 11 in an endless path. For this purpose, the front wall 13 of each mould 11 is formed with coupling lugs 21 (omitted in *Figure 2*) which engage with complementary lugs (not visible) of the next adjacent mould 11,
85 so that the moulds 11 are connected together in succession as an endless band with the guide rails 10 guiding them along an upper run indicated generally by the reference numeral 22 in *Figure 1*, around a guide roller 23 and back along a lower run
90 24.

The upper run 22 extends approximately horizontally firstly beneath a supply hopper 25 from which wet clay 26 is filled into each of the moulds 11. Immediately thereafter, the successive moulds 11 pass beneath a scraper blade or trowel blade (not
100 visible in the drawings) which scrapes off excess clay and ensures that each mould 11 is filled substantially flush with its upper surface. In the corresponding part, the upper run 22 of the endless band of moulds 11 is supported by upper run 27 of a moving endless support track (see *Figures 2* and *3*) comprising a plurality of boards 28 pivotally connected to one another and guided by rollers of which one is visible at 29 in *Figure 1*. The boards 28 are
105 toothed on their undersides to be driven by a pinion 30 (*Figure 3*), and each such board 28 is provided, adjacent its ends, with respective locator pegs 31 which engage into corresponding recesses 32 in the lower edges of the end walls 12 of the respective mould 11, it being understood that one mould 11 registers with and is supported by each of the boards
110 28.

The upper run 27 of the support track is disposed to extend below, and to support the upper run 22 of the band of moulds 11 as it extends below a pressing
120 wheel which is indicated generally by the reference numeral 33 in *Figure 1*. The roller 29 and a corresponding frame 134 (*Figure 1*) thereof are adjustable for height by jack means (not shown) for varying the action of the pressing wheel 33 on the contents of
125 the moulds 11.

The pressing wheel 33 comprises a side-by-side pair of circular disc-like side cheeks 34 mounted on a shaft 35 driven through gearing illustrated diagrammatically at 36 and 37 from an electric motor 38.
130 Accommodated between the two side cheeks 34 at

intervals therearound are a plurality of pressing members 39 each in the form of a shoe 40 of which the details are shown in Figure 5. Each such shoe 40 is a solid body, e.g. of metal, approximately triangular in cross-section and prismatic in configuration, with an opening 41 extending longitudinally there-through close to its apex. A respective pivot rod 42 extends through this opening 41 and locates by its ends in the side cheeks 34, being retained in place by split pins 43, so that each said shoe is approximately radially disposed with a respective rectangular pressing face outwardly directed. The dimensions of the pressing faces are such that each shoe 40 will fit with minimum clearance in the moulds 11 for compressing the contents thereof, and it will readily be understood that the swinging nature of the mounting of the shoes 40, provided by their rods 42, enables each shoe 40 to enter into a respective one of the successive moulds 11 passing thereunder in operation of the machine.

In the upper run 27, the boards 28 of the support track are supported by their end edges by respective lips 44 (Figure 2) on the rails 10.

In front of the guide roller 29 of the support track, the guide rails 10 guide the upper run 22 down to a discharge station indicated generally by the reference numeral 45. At this discharge station, as can more particularly be seen from Figure 2, the guide rails 10 are shaped to diverge slightly from one another over a short distance as indicated at 46, and the upper run 22 of the endless band of moulds 11 passes over a discharge conveyor 47 which leads, for example, to a brick kiln or other apparatus or means for the handling or treatment of unburnt bricks. This conveyor 47 is guided around rollers 48, 49 supported by frame 50, with roller 49 being driven through bevel gears 51, 52, shaft 53 and pulley 54, from shaft 35 by way of pulley 55 and drive belt 56.

The pinion 30 is also driven from the shaft 35, being mounted on shaft 57, carrying pulley 58 driven by belt 59 and pulley 60 on the shaft 57.

The manner of operation of the machine will readily be understood from the foregoing description. The electric motor, when running, drives the upper run 27 of the support track by way of the pinion 30 engaging with the boards 28. Each such board 28 has its respective mould 11 mounted thereon, so that the latter is moved initially beneath the hopper 25 to receive its fill of clay 26 which is subsequently smoothed off as already described. The successive filled moulds 11 then encounter the pressing wheel 33, which is driven directly by the motor 38, and a respective one of the shoes 40 enters into each said mould 11 and compresses the clay filling to about 50% of its initial volume, depending upon the adjustment of the frame 134. This compression of the clay having been effected to achieve an unburnt brick 70 in each mould 11, the successive moulds 11 now approach the discharge station 45 at which the conveyor 47 is driven by way of the gearing 51, 52, pulleys 58, 60 and belt 59 as already described. Here, because the rails 10 diverge, the end walls 12 of the mould 11 are separated as also are the front and rear walls 13, 14 (as above described) as a result of which the unburnt

brick 70 is permitted to drop onto the conveyor 47 as has been indicated by the arrow 71 in Figure 3. The rails 10 converge again after the discharge station 45 to close up the mould 11 which then passes around the guide roller 23 and into the return run of the band of moulds.

In the practical embodiment of the machine, the pressing wheel 33, which acts of course under its own gravitational weight, may be of the order of 150 to 200 kilograms, being about 3500 to 3600 cm in diameter, and 30 to 50 cm in width with 210 cm in length, 110 cm in width and 120 cm in thickness. There may be, for example, from 25 to 27 of the shoes 40, and using a motor 38 of 30 to 50 Hp geared to rotate the pressing wheel at a speed of 11 rpm, one can achieve an output of the order of 17160 pieces per hour or more than 4000,000 pieces per day which is four times what is obtainable with prior known machines.

The invention is not confined to the precise details of the illustrated example, and variations may be made thereto within the scope of the following claims.

90 CLAIMS

1. A high speed brick-pressing machine comprising a plurality of brick moulds arranged as a succession which moves along a path extending (a) beneath a hopper for clay to be filled into the successive moulds, (b) beneath a pressing wheel having distributed around its periphery a plurality of pressing members which enter the successive moulds to compress the clay therein as unburnt bricks, and (c) past a discharge station at which the unburnt bricks are emptied from the moulds.

2. A machine as claimed in claim 1 wherein the pressing wheel comprises side-by-side cheeks between which the pressing members are accommodated.

3. A machine as claimed in claim 2 wherein each pressing member comprises a pressing shoe swingably located between the side cheeks.

4. A machine as claimed in claim 3 wherein each pressing shoe is located in position by a respective rod located by its ends in the side cheeks.

5. A machine as claimed in any preceding claim wherein the moulds are connected together as an endless band of which the upper run extends beneath the hopper and the pressing wheel and past the discharge station.

6. A machine as claimed in any preceding claim wherein the discharge station comprises a conveyor over which the moulds pass to deposit their unburnt bricks.

7. A machine as claimed in claim 5 wherein the pressing wheel and the endless band are driven positively by a common drive.

8. A machine as claimed in claims 5, 6 and 7 wherein the conveyor is also driven by the common drive.

9. A machine as claimed in any preceding claim wherein each mould comprises front and rear walls which separate as the respective mould passes the discharge station.

10. A machine as claimed in any preceding claim wherein the moulds are supported by respective moving boards whilst the clay is being pressed therein.

- 5 11. A brick pressing machine substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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